

DOCUMENT RESUME

ED 453 727

HE 034 051

AUTHOR Snyder, Katherine
TITLE An Assessment of the Role of Computer Technology in the Classroom.
PUB DATE 2001-00-00
NOTE 8p.
PUB TYPE Reports - Research (143)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; *College Students; *Computer Assisted Instruction; Higher Education; Psychology; *Student Attitudes; *Teaching Methods
IDENTIFIERS Psychopharmacology

ABSTRACT

This study assessed the impact of two teaching styles on how well 30 students mastered a section of the psychopharmacology unit within the Survey of Physiological Psychology course. The first method consisted of the instructor's primary method of instruction, a lecture supplemented by demonstrations and discussions, neither of which involved computer technology. The second method, used in the same class to cover a subunit about depressants, consisted of a lecture supplemented by a computer-based learning module with hands-on demonstration and an Internet discussion group. All lecture and supplemental materials came from the same instructional materials supplier. Results suggest that students scored significantly higher on material presented through the active learning teaching style without computer technology than students who were presented with material using the computer-based technology. The in-class active learning approach that did not use computer technology was associated with better performance in this class. Students were asked about the advantages and disadvantages of using computer technology in class, and their responses provide some explanations for the current findings and some suggestions for future research. (SLD)

An Assessment of the Role of Computer Technology in the Classroom

ED 453 727

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL HAS
BEEN GRANTED BY

K. Synder

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- ☒ This document has been reproduced as received from the person or organization originating it.
- ☐ Minor changes have been made to improve reproduction quality.
- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

An Assessment of the Role of Computer Technology in the Classroom

Computer technology has had a tremendous impact on the teaching of psychology, from class web pages to interactive learning modules to entire courses taught online. Specific course pages and interactive textbook information, study guides, and interactive discussions are a few of the many applications of computer technology in the teaching of psychology. Students are able to link onto nearly every professional society in psychology, many of which link to resources in psychology, job openings, newsgroups, and mailing lists. Many sites also provide a wealth of information on psychological issues as well as graduate schools, GRE preparation, employment announcements, grants, and online Resume or Vita databases. Students have access via the internet to many professional psychological journals, where they can obtain lists of abstracts and/or full text articles depending on database resources of the library.

Not only can students obtain full text articles for research projects, they also can find references for numerous tests and assessment materials for research projects and may even be able to review the proceedings of international conferences on their topics. Through the internet, students can obtain a wealth of information from the National Institute of Mental Health and the Center for Disease Control. In many cases, these government agencies provide toll free numbers whereby students can call and obtained free articles on ongoing government supported research across the nation.

Before we can take advantage of this tremendous technology as well as conduct assessment research on the quality of student learning, we have to overcome numerous barriers (DiBlassio, Simonin, DeCarolus, Morse, Jean, Vassalotti, Franks, & Chambliss, 1999; Lane & Atlas, 1999; McClure, 1999). Barriers to the use of technology in the classroom consist not only of the cost and distribution of hardware and software, but also the increased demand on faculty course preparations. Another challenge is setting up a system to ensure that students are reviewing quality sites and discussion groups. Despite the rapid movement of the use of technology in the classroom, another barrier is the assessment of the value of this technology on improving the quality of education that students receive.

Numerous studies have demonstrated that the more deep processing (critical thinking and analysis) and elaborative processing (seeing the applications of psychology course material to their own lives and society) occurs for psychology instructors who take an active learning approach, whereby the traditional lecture material is supplemented with demonstrational, discussion, and laboratory material (Aschraft, 1994). Active learning teaching styles not only engage the student's interest more, they also enable instructors to present the material in different ways, which increases the likelihood the method of presentation will match the learning style of the student.

In light of research on active learning instructional approaches, it seems reasonable to expect that the use of computers in the classroom would be a tremendous tool to engage students, encourage collaborative learning, and match the learning styles of students. For instance, a lecture on the neuropsychological basis of memory supplemented with online brain images of Magnetic Resonance Imaging (MRI) and Regional Cerebral Blood Flow (rCBF) studies and real-time video clips of dementias and amnesias, would be ideal. With this interactive teaching strategy, students would also be able to participate in discussion groups with other students, professionals, and patients with memory disorders as well as link up to other universities for real-time conferencing.

The present study will assess the impact of two different teaching styles on how well students master a section of the psychopharmacology unit within the Survey of Physiological Psychology course. The first teaching method consisted of the instructors' primary method of instruction, which consisted of a lecture supplemented by demonstrations and discussions, neither of which involve computer technology. This teaching method was used to cover the psychopharmacology subunit on stimulant drugs. The second teaching method was used to cover the depressant subunit of the psychopharmacology material. This teaching method, consisted of a lecture supplemented by computer-based learning module instruction, hands-on demonstrations, and an internet discussion group. Since the design was within subjects and both subunits were presented during one class, the first class in the psychopharmacology unit, it should be noted that this was just the beginning of an in-depth unit covering five class sessions.

To ensure that the content of the material for each subunit were of equal difficulty, all lecture and supplemental material were obtained through the Carlson (1998), Physiology of Behavior, Instructors Resource Manual with companion internet material. Both subunits were introduced for twenty minutes each using a within subjects design (the same classes), with order of presentation counterbalanced. Students were then given a short multiple choice quiz after each introductory subunit. Quiz questions covered the same material for each of the subunits, asking about the general effect of the drugs on the central nervous system and how three exemplar drugs for the subunit affect behavior at the level of the synapse. All questions were taken from the Carlson (1998) test bank and were of equal difficulty as rated by this resource.

It was hypothesized that there would be a significant difference between quiz scores for sections taught using an active learning approach without the computer technology and section sections taught using the interactive computer technology. A within subjects t-test was performed on the quiz scores. Results suggested that students scored significantly higher ($M = 9.23$; $SD = 1.68$) on material presented with the active learning teaching style without computer technology than students ($M = 7.97$; $SD = 1.75$) who were presented with material using the computer based technology [$t(29) = 2.86$, $p = 0.006$].

Since there was a difference in quiz scores as a function of in-class active learning teaching methods with and without computer technology, support for the hypothesis was obtained. In sum, results suggested that students perform better with an in-class active learning approach not using the computer technology. As an additional means of assessment, students were asked to list the advantages and disadvantages of the use of technology in the classroom. In looking at the student responses, many potential reasons for the present finding as well as suggestions for future research are apparent.

Table 1

Advantages and Disadvantages of the Use of Technology in the Classroom as Quoted from Student Responses

| Advantages | Disadvantages |
|---|--|
| <p>Can help point out key ideas you need to know.</p> <p>Efficient and fast.</p> <p>Graphics help in understanding the topic.</p> <p>Able to go over what we learned in class on the web site at home.</p> <p>Better, more clearer pictures.</p> <p>The illustrations really added to the information.</p> <p>It would be a good learning tool for self-teaching out of the classroom.</p> <p>Interesting and different.</p> <p>Excellent visual demonstrations.</p> <p>Easy to see and hear.</p> <p>Interesting material with detailed pictures.</p> <p>It incorporates tools already known by many students.</p> <p>Technology allows for rapid dissemination of the latest information.</p> <p>Easy to understand.</p> <p>It provides a nice outline for the lecture.</p> <p>More likeli to remember what was discussed in class.</p> <p>Exposure to supplemental information, variety in presentation visual examples.</p> <p>Can offer information that may not be available to some people.</p> | <p>Oversimplifies the information.</p> <p>Teachers in the learning module were monotone making it had to become interested.</p> <p>Hard to take notes from what the computer said.</p> <p>I wanted to write the information down before moving on.</p> <p>It is too slow.</p> <p>Can have open questions but they cannot be answered.</p> <p>We become more reliant on the technology than well trained teachers.</p> <p>Can't stop and ask questions.</p> <p>Can be overused and become boring.</p> <p>Must be reinforced by instructor to sure of comprehension.</p> <p>Expensive.</p> <p>Not as flexible.</p> <p>Better as a one-on-one technique</p> <p>Should be self-paced.</p> <p>Every school may not be able to afford it.</p> <p>Causes people to not pay attention because it is not a real person.</p> <p>Lack of personal examples.</p> <p>Most of the graphics could be used on overheads.</p> <p>Preparation time increased for the instructor.</p> |

Note. Of the thirty students in the sample, many gave nearly identical answers about the advantages and disadvantages of the use of technology in the classroom.

Table 2

Student Comments on Computer Technology Developed for use Outside of the Classroom

"I went through the web page and I thought was the coolest was the whole brain atlas. I went under the degenerative diseases and looked at Huntington's and Alzheimer's. It is really neat how it shows step-by-step how the brain deteriorates with these diseases."

"I went to the website and checked out sleep disorders and I found tons of stuff on the problem my cousin has"

"I went to the class web page and I found a truly amazing web site on psychology and religion. I have always wondered about careers that intertwine psychology and religion. I emailed Dr. Neilson (the creator of the web site) and he gave me good suggestions on how to prepare for a career. I never knew you could use the computer for this. I feel as though a whole new avenue has opened up for me"

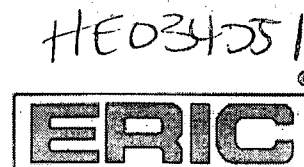
Note. I expect to see more feedback on the technology resources as the semester continues.

References

- Ashcraft, M.H. (1994). Human memory and cognition (2nd Ed.). New York: Harper Collins Publishers.
- Cook, T.D., & Campbell, D.T. (1979). Quasi-Experimentation: Design & analysis issues for field settings. Boston: Houghton Mifflin Company.
- DiBlassio, J., Simonin, D., DeCarolus, A., Morse, L., Jean, J., Vassalotti, L., Franks, K., & Chambliss, C. (1999). Assessing the quality of psychological healthcare sites available on the internet [on-line]. Available:
<http://www.cmhc.com/perspectives/articles/art12982.htm>
- Lane, D.M., & Atlas, R.S. (1999). The networked classroom [on-line]. Available:
<http://www.york.ac.uk/inst/ctipsyc/web/CiP96CD/LANE/EXTRA/LONG.HTM>
- McClure, P. (1999). Technology in university teaching and learning [on-line]. Available: <http://www.oclc.org/oclc/man/10045rld/mcclure.htm>
- Nichols, J.O. (1995). The departmental guide and record book for student outcomes Assessment and institutional effectiveness. New York: Agathon Press.



U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)



REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

| | |
|--|--------------------------------|
| Title: <i>An Assessment of the Role of Computer Technology in the Classroom</i> | |
| Author(s): <i>Katharine Snyder, Ph.D.</i> | |
| Corporate Source: <i>Shepherd College</i> | Publication Date: <i>NA</i> |

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education (RIE)*, are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1

☐

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) and paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A

☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B

☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign
here,→
please

| | | |
|--|---|-----------------------------|
| Signature: <i>Katharine Snyder, Ph.D.</i> | Printed Name/Position/Title: <i>Katharine Snyder, Ph.D., Assistant Prof. of Psychology</i> | |
| Organization/Address: <i>Shepherd College</i> | Telephone: <i>304-876-5435</i> | FAX: <i>304-876-5493</i> |
| | E-Mail Address: <i>KSNYDER@SHEPHERD.EDU</i> | Date: <i>5/1/2001</i> |